

## REMARKS

### I. Introduction

With the addition of new claims 19 to 20 and the cancellation of claim 10, claims 8, 9 and 11 to 20 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that the present application is in condition for immediate allowance, and reconsideration is respectfully requested.

### II. Rejection of Claims 8 to 13 and 16 Under 35 U.S.C. § 103(a)

Claims 8 to 13 and 16 were rejected under 35 U.S.C. § 103(a) as unpatentable over a combination of either U.S. Patent Application Publication No. 2002/0118013 ("Kowalski et al.") and U.S. Patent Application Publication No. 2003/0231098 ("Wan"), or U.S. Patent No. 5,602,471 ("Muth et al.") and Wan. It is respectfully submitted that neither of these combinations of documents renders unpatentable claims 8 to 13 and 16 for at least the following reasons.

Claim 8 relates to a GMR sensor element, comprising: eight GMR resistor elements arranged in a rotationally symmetrical positioning and connected to each other to form two Wheatstone full bridges.

Although the rejection may not be agreed with, to facilitate matters, claim 8 has been amended to recite the features of claim 10 and an additional feature that **the GMR resistor elements are oriented with respect to one another such that a line coplanar to the GMR sensor element, passing approximately through a center of a circle or octagon formed by the eight GMR resistor elements, and bisecting any of the GMR resistor elements is approximately perpendicular to a strip direction of the bisected GMR resistor element.**

Accordingly, claim 10 has been canceled.

Neither Kowalski et al., nor Muth et al. disclose or suggest this feature. As is apparent from Fig. 1 of Kowalski et al. and Fig. 1 of Muth et al., a line drawn from the center of either sensor element arrangement and bisecting any of the associated sensor elements is not perpendicular to a strip direction of the respective sensor element. Wan does not cure the deficiencies of Kowalski et al. and Muth et al. with respect to the above-mentioned feature of claim 8, as amended. Accordingly, it is respectfully submitted that neither the combination of Kowalski et al.

and Wan, nor the combination of Muth et al. and Wan render unpatentable claim 8, as amended.

Claim 11 has been amended to be in independent form and to include all of the features of its base claim, claim 8, prior to amendment. Neither Kowalski et al., nor Muth et al., nor Wan disclose or suggest the feature of claim 11 as amended, that each of the eight GMR resistor elements is subdivided into two equally constructed halves having directions, of the GMR resistor elements that are structured in strip form, that are orthogonal to each other. Indeed, the Office Action does not specify how claim 11 is rendered obvious by any of these references. Therefore, it is respectfully submitted that neither the combination of Kowalski et al. and Wan, nor the combination of Muth et al. and Wan renders unpatentable claim 11, as amended.

As for claims 9, 12, 13 and 16, which are dependent from claim 8 and therefore include all of the features of claim 8, it is respectfully submitted that these claims are allowable for at least the reasons set forth above in support of the patentability of claim 8.

Furthermore, in regard to the allegation of inherency with respect to claim 12, Applicants respectfully traverse the unsupported contention that "... it is inherent that the measured angle of an outer magnetic field with respect to a magnetization of a reference layer in such angle sensors of Kowalski et al. or Muth et al. in view of Wan is over 360 degrees (i.e., measurement beyond one complete turn)." Published information and/or an affidavit under 37 C.F.R. § 1.104(d)(2) is respectfully requested to support this otherwise unsupported contention of inherency.

As mentioned above, claim 10 has been canceled, thereby rendering moot the rejection with respect to this claim.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

### **III. Rejection of Claims 14 to 18 Under 35 U.S.C. § 103(a)**

Claims 14 to 18 were rejected under 35 U.S.C. § 103(a) as unpatentable over a combination of either Kowalski et al. or Muth et al., Wan, and either U.S. Patent No. 6,566,867 ("Schroeder et al.") or U.S. Patent No. 6,519,549

("Lin et al."). It is respectfully submitted that neither of these combinations of documents renders unpatentable claims 14 to 18 for at least the following reasons.

Claim 14 is an independent method claim analogous to independent device claim 8, and has been amended in a manner analogous to claim 8. In addition, neither Schroeder et al., nor Lin et al. cure the critical deficiencies of Kowalski et al., Muth et al. and Wan with respect to the feature of claim 14 as amended, that the eight GMR resistor elements are oriented with respect to one another such that a line coplanar to the GMR sensor element, passing approximately through a center of a circle or octagon formed by the eight GMR resistor elements, and bisecting any of the GMR resistor elements is approximately perpendicular to a strip direction of the bisected GMR resistor element. Therefore, it is respectfully submitted that claim 14, as amended, is allowable for at least these reasons and the reasons set forth above in support of the patentability of claim 8.

As for claims 17 and 18, which are dependent from claim 14 and therefore include all of the features of claim 14, it is respectfully submitted that these claims are allowable for at least the reasons set forth above in support of the patentability of claim 14.

Claims 15 and 16 are dependent from claim 8 and therefore include all of the features of claim 8. In addition, neither Schroeder et al., nor Lin et al. cure the critical deficiencies of Kowalski et al., Muth et al. and Wan with respect to the feature of claim 8 as amended, that the GMR resistor elements are oriented with respect to one another such that a line coplanar to the GMR sensor element, passing approximately through a center of a circle or octagon formed by the eight GMR resistor elements, and bisecting any of the GMR resistor elements is approximately perpendicular to a strip direction of the bisected GMR resistor element. Therefore, it is respectfully submitted that these claims allowable for at least these reasons and the reasons set forth above in support of the patentability of claim 8.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

#### **IV. Rejection of Claims 16 and 18 Under 35 U.S.C. § 103(a)**

Claims 16 and 18 were rejected under 35 U.S.C. § 103(a) as unpatentable over a combination of either Kowalski et al. or Muth et al., Wan, either Schroeder et al. or Lin et al., and U.S. Patent Application Publication No.

2002/0149358 ("Doescher"). It is respectfully submitted that neither of these combinations of documents renders unpatentable claims 16 and 18 for at least the following reasons.

Claims 16 and 18 depend from claims 8 and 14, respectively, and therefore include all of the features of claims 8 and 14, respectively. In addition, Doescher does not cure the critical deficiencies of Kowalski et al., Muth et al., Wan, Schroeder et al. and Lin et al. with respect to the feature of claims 8 and 14, as amended, that the GMR resistor elements are oriented with respect to one another such that a line coplanar to the GMR sensor element, passing approximately through a center of a circle or octagon formed by the eight GMR resistor elements, and bisecting any of the GMR resistor elements is approximately perpendicular to a strip direction of the bisected GMR resistor element. Therefore, it is respectfully submitted that claims 16 and 18 are allowable for at least these reasons and the reasons set forth above in support of the patentability of claims 8 and 14.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

#### **V. New Claims 19 to 20**

New claims 19 to 20 have been added herein. It is respectfully submitted that claims 19 to 20 add no new matter and are fully supported by the present application, including the Specification.

Since claim 19 depends from claim 8, it is respectfully submitted that claim 19 is patentable over the references relied upon for at least the reasons more fully set forth above in support of the patentability of claim 8.

Since claim 20 depends from claim 14, it is respectfully submitted that claim 20 is patentable over the references relied upon for at least the reasons more fully set forth above in support of the patentability of claim 14.


**VI. Conclusion**

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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By:

  
Gerard A. Messina  
Reg. No. 35,952

RN 42,194

KENYON & KENYON LLP  
One Broadway  
New York, New York 10004  
(212) 425-7200  
**CUSTOMER NO. 26646**